

# VoCATS

## Course Blueprint

### **Trade and Industrial Education**

*7901 Scientific & Technical  
Visualization I*

### **Technology Education**

*8006 Scientific & Technical  
Visualization I*

*Public Schools of North Carolina  
State Board of Education • Department of Public Instruction  
Curriculum and School Reform Services  
Division of Instructional Services*

*Raleigh, North Carolina  
Summer 2005*

*Special thanks to the following educators and business people who reviewed and approved this blueprint for technical content and appropriateness for the industry.*

*Gilbert Blaylock – North Vance High School*

*Beverly Cea – Guilford Early College*

*Phyllis Jones – Page High School*

*Roy Kimmins – Philip J. Weaver Education Center*

*Rick Lacek – South Mecklenburg High School*

*This blueprint has been reviewed by business and industry representatives for technical content and appropriateness for the industry. Contact [tshown@dpi.state.nc.us](mailto:tshown@dpi.state.nc.us) for more information.*

## VoCATS Course Blueprint

A course blueprint is a document laying out the framework of the curriculum for a given course.

Shown on the blueprint are the units of instruction, the core competencies in each unit, and the specific objectives for each competency. The blueprint illustrates the recommended sequence of units and competencies and the cognitive and performance weight of the objective within the course.

The blueprint should be used by teachers to plan the course of work for the year, prepare daily lesson plans, construct instructionally valid interim assessments. Statewide assessments are aligned directly with the course blueprint.

For additional information about this blueprint, contact program area staff. For additional information about VoCATS, contact program area staff or VoCATS, Career-Technical Education, Division of Instructional Services, North Carolina Department of Public Instruction, 301 North Wilmington Street, Raleigh, North Carolina 27601-2825, 919/807-3876, email: [rwelfare@dpi.state.nc.us](mailto:rwelfare@dpi.state.nc.us).

### Interpretation of Columns on VoCATS Course Blueprints

No.	Heading	Column information
1	Comp# Obj.#	Comp=Competency number (two digits); Obj.=Objective number (unique course identifier plus competency number and two-digit objective number).
2	Unit Titles/Competency and Objective Statements	Statements of unit titles, competencies per unit, and specific objectives per competency. Each competency statement or specific objective begins with an action verb and makes a complete sentence when combined with the stem "The learner will be able to. . ." (The stem appears once in Column 2.) Outcome behavior in each competency/objective statement is denoted by the verb plus its object.
3	Time Hrs	Space for teachers to calculate time to be spent on each objective based on the course blueprint, their individual school schedule, and analysis of students' previous knowledge on the topic.
4&5	<u>Course Weight</u>  Cognitive  Performance	Shows the relative importance of each objective, competency, and unit. Weight is broken down into two components: cognitive and performance. Add the cognitive and performance weights shown for an objective in columns 4 and 5 to determine its total course weight. Course weight is used to help determine the percentage of total class time that is spent on each objective. The breakdown in columns 4 and 5 indicates the relative amount of class time that should be devoted to cognitive and performance activities as part of the instruction and assessment of each objective. Objectives with performance weight should include performance activities as part of instruction and/or assessment.
6	Type Behavior	Classification of outcome behavior in competency and objective statements. (C=Cognitive; P=Performance)
7	Integrated Skill Area	Shows links to other academic areas. Integrated skills codes: A=Arts; E=English Language Arts; CD=Career Development; CS=Information/Computer Skills; H=Healthful Living; M=Math; SC=Science; SS=Social Studies.
8	Core Supp	Designation of the competencies and objectives as Core or Supplemental. Competencies and objectives designated "Core" must be included in the Annual Planning Calendar and are assessed on the statewide assessments..

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**TRADE AND INDUSTRIAL EDUCATION**  
**COURSE BLUEPRINT FOR 7901 Scientific and Technical Visualization I**

Comp # Obj #	Unit Titles / Competency and Objective Statements (The learner will be able to:)	Time Hours	Cognitive Weight		Type Behavior	Integrated Skill Area	Core Supp
			Cognitive	Performance			
1	2	3	4	5	6	7	8
	Course Level I	135	100%				
			67%	33%			
<b>A</b>	<b>LEADERSHIP DEVELOPMENT</b>						
<b>V101.</b>	<b>Explain basic business meeting skills and goal setting.</b>		2%		<b>C3P</b>	<b>CD</b>	<b>Core</b>
V101.01	Identify basic business meeting procedures.		1%		C3P	CD	Core
V101.02	Establish personal and organizational goals.		1%		C2	CD	Core
<b>B</b>	<b>HISTORY AND IMPACT OF SCIENTIFIC &amp; TECHNICAL VISUALIZATION</b>						
<b>V102.</b>	<b>Recognize the history and impact of scientific &amp; technical visualization.</b>		6%		<b>C1</b>	<b>CD/SS</b>	<b>Core</b>
V102.01	Describe the historical significance of scientific & technical visualization.		2%		C1	SS	Core
V102.02	Describe the technological advancements of scientific & technical visualization.		2%		C1	SS	Core
V102.03	Recognize types of scientific & technical visualization and related careers.		2%		C1	CD	Core
<b>C</b>	<b>VISUALIZATION TOOLS</b>						
<b>V103.</b>	<b>Analyze the use of visualization tools.</b>		9%	3%	<b>C3P</b>	<b>CS/SS</b>	<b>Core</b>
V103.01	Describe basic computer hardware and software.		4%		C1	CS	Core
V103.02	Interpret the use and application of different types of software programs.		3%		C2	CS	Core
V103.03	Summarize the ethical use of electronic media.		2%		C2	SS	Core
V103.04	Demonstrate basic computer knowledge.			3%	C3P	CS	Core
<b>D</b>	<b>UNDERLYING PRINCIPLES OF VISUALIZATION</b>						
<b>V104.</b>	<b>Apply basic principles of visualization.</b>		22%	8%	<b>C3P</b>	<b>A</b>	<b>Core</b>
V104.01	Describe design fundamentals.		5%		C1	A	Core
V104.02	Interpret color and its applications.		5%		C2	A	Core
V104.03	Discuss vector and bitmap images.		4%		C2	A	Core
V104.04	Identify effective 2D presentation techniques.		4%		C1	A	Core
V104.05	Describe 2D software applications and their basic functions.		4%		C1		
V104.06	Demonstrate effective presentation techniques using appropriate design fundamentals.			8%	C3P	A	Core

(Recommended hours of instruction: 135-180)

<b>E</b>	<b>DATA VISUALIZATION</b>						
<b>V105.</b>	<b>Synthesize data for scientific &amp; technical visualizations.</b>		<b>12%</b>	<b>10%</b>	<b>C3P</b>	<b>A/CS/M/SC</b>	<b>Core</b>
V105.01	Evaluate methods for displaying data using charts and graphs.		5%		C3	A/CS	Core
V105.02	Describe the steps of a design brief.		5%		C1	SC	Core
V105.03	Interpret data for use in charts and graphs.		2%		C2	M/SC	Core
V105.04	Apply data to make an appropriate graph.			10%	C3P	A/CS/M/SC	Core
<b>F</b>	<b>STATIC AND DYNAMIC VISUALIZATION</b>						
<b>V106.</b>	<b>Demonstrate visualization processes.</b>		<b>16%</b>	<b>12%</b>	<b>C3P</b>	<b>A/CS/M</b>	<b>Core</b>
V106.01	Recognize digital image formats.		3%		C1	CS	Core
V106.02	Summarize basic 3D modeling concepts.		8%		C2	A/CS/M	Core
V106.03	Recognize basic rendering techniques.		3%		C1	A/CS	Core
V106.04	Summarize basic animation techniques		2%		C2	A/CS	Core
V106.05	Produce a 3D model with animation and rendering.			12%	C3P	A/CS/M	Core